

Roll No: _____

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M.Sc. Biochemistry, Semester II Examination, 2023
Paper Title: Protein and Proteomics
Paper Code: MBC 202

Time: 3 h

Max Marks: 75

Note: This paper has 3 Sections, A, B, and C. Attempt all three sections. Section A: Answer all the questions; Section B: Answer any two; Section C: Answer all the questions, each question in this section has an internal choice

Abbreviations Used:

CLO- Course Outcome, PLO- Program Outcome, BTL- Bloom Taxonomy Level: BT level 1- Remember; BT level 2-Understand; BT level 3-Apply; BT level 4-Analyse; BT level 5-Evaluate, BT level 6-Create

SECTION A**[1x15=15 Marks]**

Q. No. 1	Do as directed (<u>Attempt all questions</u>)	BTL	CLO	PLO
i.	----- amino acid is abundantly found in collagen [Fill in]	1	2	3
ii.	Biuret reaction is specific for ----- [Fill in]	3	1	3
iii.	pI (isoelectric point) of histidine is----- [Fill in]	2	1	2
iv.	The enzyme which breaks up starch into sugar is called ----- [Fill in]	1	3	3
v.	Each haemoglobin carries ----- number of O ₂ molecules [Fill in]	4	3	2
vi.	Automated Edman degradation method is used for ----- [Fill in]	2	4	3
vii.	Mass spectrometry can be used to study proteomics. [True/False]	3	5	2
viii.	Salting out mechanism is useful in salt fractionation. [True/False]	4	1	3
ix.	The specific activity tells you whether or not your sample became purer following the purification technique. [True/False]	1	3	2
x.	Human hemoglobin is an assembly of two myoglobin-like subunits. [True/False]	2	2	3
xi.	Functions of dithiothreitol.	3	4	3
xii.	What are the chaotropic agents?	1	2	3

xiii.	What is a protein domain?	2	1	3
xiv.	Dihedral angles.	3	2	3
xv.	Hydrophobic interactions.	1	5	3

SECTION B**[2x15=30 Marks]**

Q. No. 2	<u>Long type Questions (Attempt ANY TWO out of four)</u>	BTL	CLO	PLO
(a)	What is end terminal analysis. Explain methods for C-terminal analysis.	1	4	3
(b)	Discuss Anfinsen experiment on Ribonuclease. Also discuss the important conclusions of his experiment.	2	1	2
(c)	Report steps involved in predicting 3D protein structure determination employing X-ray crystallography. Write about the limitation.	3	2	3
(d)	Explain the principle and applications of Mass spectrometry.	4	5	2

SECTION C**[5x6=30 Marks]**

Q. No. 3	<u>Short-type Questions (Attempt all questions, each question has an internal choice)</u>	BTL	CLO	PLO
(a)	Discuss about the effect of temperature and detergents on the structure of proteins. OR Write a short note on the isoelectric pH of protein and its importance.	1	2	3
(b)	Write the role of chaperones in protein folding. OR Define quaternary structure of proteins with suitable examples.	2	3	3
(c)	Describe various methods to quantify the cysteine residues in an unknown protein. OR Discuss the salient features of Ramachandran Plot.	3	1	2
(d)	Elucidate the proteomic tools in protein structure prediction and analysis. OR Discuss Two-dimensional polyacrylamide gel electrophoresis.	1	5	3
(e)	Differentiate between the alpha helix and beta structure found in proteins. OR Discuss the forces stabilizing the tertiary protein structures.	4	2	3

END OF THE QUESTION PAPER